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(54) Title: METHOD FOR DETERMINING TRANSCRIPTION FACTOR ACTIVITY AND ITS TECHNICAL USES

(57) Abstract

Certain transcription factors (enhancer binding proteins) significantly increase transcription rates from genes by nicking a single DNA strand in the vicinity of their DNA binding sites, thereby allowing RNA polymerase to gain access to the transcribed DNA strand by a process of "threading". DNA template nicking is a detectable and quantifiable byproduct indicative of transcriptional activation that can be used to design practical assays. These assays are used to determine which transcription factors (enhancer binding proteins) are actively catalyzing the transcription of a gene in any cell type, or in any cell in response to any drug or treatment. This group of transcription factors have a predictable molecular biological activity in addition to transcription activation, namely site-specific DNA strand cleavage.

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